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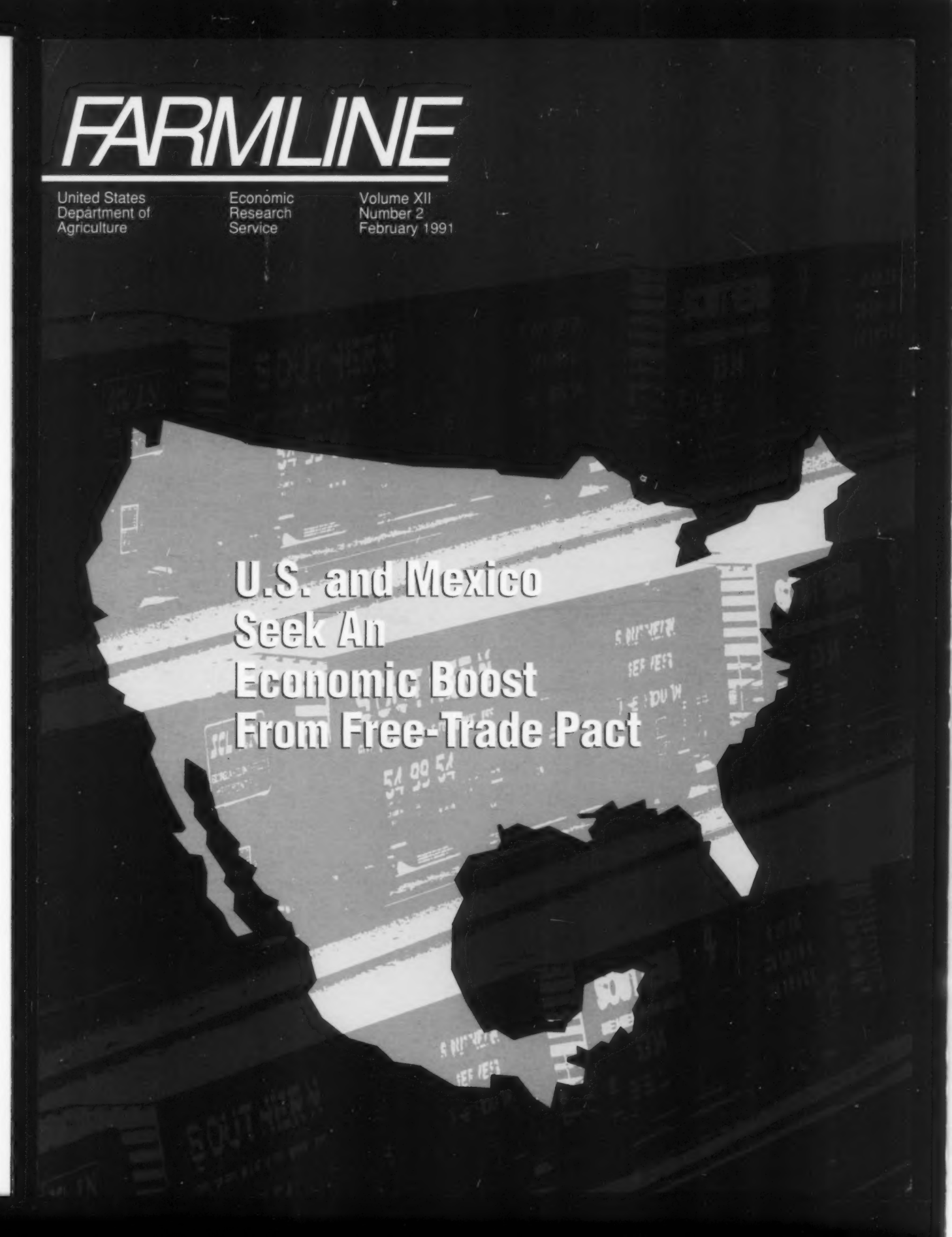
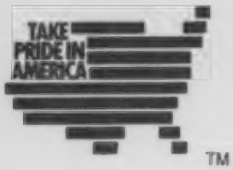


U.S. and Mexico Seek An Economic Boost From Free-Trade Pact



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PERSPECTIVES

Weather problems have hit California agriculture (the leader of the U.S. farm sector) with a double whammy—a severe cold snap early this winter and a serious drought that has been continuing for several years.

Temperatures fell to below 20 degrees the week before Christmas in one of the worst freezes of the century for California farmers. The freezes cost growers nearly $700 million, according to an estimate January 9 by a dozen county agricultural commissioners. In Tulare County alone, $286 million worth of navel oranges were destroyed. Among other crops heavily damaged were avocados, lemons, broccoli, figs, pistachios, artichokes, cauliflower, celery, strawberries, and flowers. The greatest price increases were likely for oranges, lemons, and tangerines, California State officials said.

California also is suffering through the fifth winter in the longest drought to hit the State since the 1930's. The opening months of the snow season this winter were the third driest in 70 years in the northern Sierra Nevada—the main source of water for Central Valley farms as well as Southern California cities. A period of heavy snow and rain could change the situation, and this sometimes happen (as in March 1989), but it is very unlikely.

About 40 percent of the winter precipitation usually falls before January 1, but this year the total was only 10 percent of what falls in an average winter. Even if the rest of winter is average, officials say that the State will be forced to endure this summer the most severe water use rules that most residents have seen in their lifetimes. The State Water Project will furnish no water to California farmers this year, cancelling contracts for 1.2 million acre feet. And farmers are expected to receive only about one-third of the 7 million acre feet of irrigation water scheduled to come from the federal Central Valley Project.

Irrigation is crucial to California agriculture. In 1987, the latest year for which exact figures are available, more than 90 percent of the State's harvested cropland was irrigated—6.96 million out of 7.68 million acres. California accounted for nearly 17 percent of the nation's irrigated harvested cropland of 41.8 million acres in 1987.

California has been the Nation's leading agricultural State for many years. In 1989, it produced $17.6 billion worth of farm products, including more than 50 percent of the Nation's fruits, vegetables, and nuts. California grows virtually 100 percent of the Nation's almonds, artichokes, dates, figs, kiwifruit, olives, pistachios, pomegranates, prunes, raisins, and walnuts, 98 percent of the apricots, 97 percent of the nectarines, 96 percent of the grapes, 95 percent of the brussels sprouts, and 90 percent of the broccoli, according to the State's Department of Food and Agriculture.

In 1989, USDA statistics indicate, California was the leading State in the production of six of the Nation's top 25 farm commodities—tomatoes, grapes, lettuce, eggs, hay, and greenhouse/nursery products. It was second in dairy products, cotton, oranges, rice, and apples, and third in potatoes, turkeys, and sugar beets.

California produced $2.4 billion worth of dairy products in 1989, $1.6 billion worth of grapes, $1.6 billion worth of greenhouse/nursery products, $1.5 billion worth of cattle and calves, $1.1 billion worth of cotton, $809 million worth of tomatoes, $670 million worth of lettuce, $658 million worth of hay, $472 million worth of oranges, $402 million worth of eggs, $361 million worth of broilers, and $249 million worth of turkeys.

— Jack Harrison

FARMLINE

AGRICULTURE...NATURAL RESOURCES...RURAL DEVELOPMENT
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FEATURES

U.S., Mexico Seek Economic Boost From Free-Trade Pact *by Doug Martinez* **2**

The United States and Mexico have started preliminary discussions about a free-trade agreement. It would be similar to the U.S.-Canadian pact signed in 1989. An agreement with Mexico could provide an economic boost for both nations, economists say.

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USDA has begun collecting detailed information about the use of chemicals by the Nation's farmers. The data-gathering project is an outgrowth of increased concerns about food safety and water quality. Policymakers and other officials need the information.

Alternative Crops Help Farmers Look to the Future *by Priscilla Glynn* **12**

Some farmers seeking new crop alternatives might want to consider floriculture, the greenhouse and nursery sector, or some specialty commodities. Economists say that several such areas have been growing rapidly and provide opportunities—for the right people in the right places.

U.S. Importing Much of Its Fertilizer *by Doug Martinez* **16**

Low-cost ingredients for commercial fertilizers are one factor in this Nation's high agricultural productivity and its leadership as a grain exporter. More and more of those chemicals are being imported, including about 80 percent of our potash.

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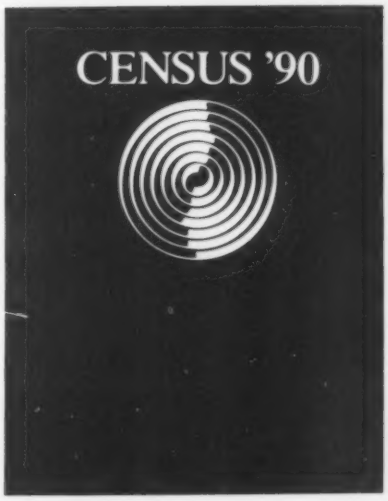
This is your handy guide to winter and spring release dates for situation and outlook reports of the Economic Research Service, crop and livestock reports of the National Agricultural Statistics Service, and supply-demand estimates of the World Agricultural Outlook Board.



U.S., Mexico Seek Economic Boost From Free-Trade Pact

The dream of a North American "Common Market"—rivaling the European Community in market size—may be realized more readily than anyone imagined.

At the same time, Mexico's struggle to step up from its Third-World status—before the close of the century—may grow much easier.

Both of these visions of the future spring from the proposed free-trade agreement between the United States and Mexico.

Already being discussed in joint meetings of U.S. and Mexican officials, the free-trade agreement could have implications for the U.S.-Canadian Free Trade Agreement signed in 1989.

In fact, Canadian officials have asked to be included in any formal negotiations leading to a U.S.-Mexico accord, holding out the hope of an agreement that would link the three nations of North America.

That idea of a common market or free-trade zone seems natural to some observers, given the trade and other ties that already exist among these countries. Certainly, that's as true of the United States and Mexico as it is of the United States and Canada.

According to economist John Link of USDA's Economic Research Service, "few economies and societies are as interrelated as the United States and Mexico. They share a rich heritage of historical and cultural similarities."

Few economies and societies are as interrelated as the United States and Mexico.

Our Third Largest Market

Mexico is the third largest single-country market for U.S. farm exports (after Japan and Canada). In 1989, Mexico imported about $2.7 billion of U.S. agricultural goods. Mexico was also the second largest supplier of U.S. agricultural imports in 1989 (after Canada), exporting nearly $2.3 billion of agricultural products to the United States.

"During 1989, the United States imported an estimated 90 percent of Mexican agricultural exports and supplied three-fourths of Mexico's agricultural imports," says Link. "The agricultural trade balance was in Mexico's favor during the 1960's and 1970's and in the United States' favor for most of the 1980's."

U.S.-Mexico agricultural trade (exports and imports) increased from $3.5 billion in 1980 to $5 billion in 1989.

Moreover, notes Link, "the value of this trade grew at one of the highest growth rates among major U.S. agricultural trading partners."

Even so, the growth pattern of U.S. and Mexican agricultural exports has differed.

"While Mexican agricultural exports to the United States generally showed a steady growth trend (aside from a value surge in 1986 resulting mainly from higher coffee prices), U.S. agricultural exports to Mexico have fluctuated widely, mainly reflecting Mexican harvest conditions and adverse Mexican economic conditions," says Link. "The availability of U.S. export credit guarantees and competition from other suppliers may also be factors."

Of course, Mexico is also an important trading partner of the United States in total merchandise trade.

"Mexico is our third most important market behind Canada and Japan, taking about 6 percent of the United States' total merchandise exports," says Link. "On the import side, Mexico has been the fourth most important supplier (providing about 5 percent of the United States' total imports) behind Japan, Canada, and West Germany."

Since the early 1980's, he adds, trade between the two countries has grown sharply. But while trade has grown, the U.S. balance of total merchandise trade with Mexico has been negative.

Major Issues Remain

Important as these ties are, however, there are still major differences between the two

countries that present problems for negotiators.

One issue already being raised (on the Mexican side) is comparable to one that emerged during U.S.-Canadian talks—that of the relative size and strength of the U.S. economy compared to Canada (and now Mexico).

"The United States' economy is vastly larger than the Mexican economy," says Link. "With a gross domestic product (GDP) of $201 billion in 1989, Mexico's GDP was less than 5 percent of that of the United States."

On a per capita basis, U.S. GDP was $20,900, compared to about $2,400 for Mexico.

Mexico's economy is also much more reliant on agriculture than that of the United States.

Although the proportion of GDP generated by both countries' agricultural sectors has declined as the industrial and service sectors have grown, Mexico's farm sector accounts for approximately 9 percent of GDP, while the U.S. share is less than 3 percent.

For many Mexican workers, agriculture has an even greater importance. About one-third of the Mexican population continues to live and work in rural, largely agricultural areas.

"This figure probably understates the importance of the Mexican 'food and fiber' sector because it doesn't consider marketing and processing," says Link.

Mexico's population itself is roughly 80 million, about a third that of the United States, and averages about 10 years younger. In land area, Mexico is the world's twelfth largest country—about 20 percent the size of the United States.

The relative strengths of the two nations' agricultural sectors have also raised the fear among some Mexicans that the United States would gain more from any free-trade agreement.

"Mexico's natural endowment of farmland is poor when compared to the United States," says Link. "About two-thirds of Mexico is arid or semi-arid."

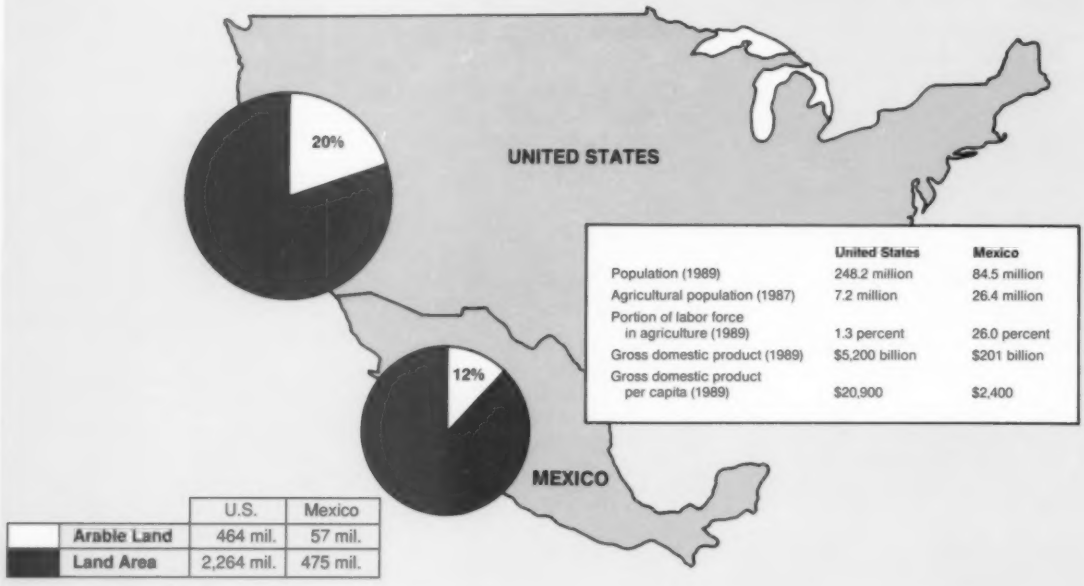
The country's total arable land area is about 57 million acres compared to 464 million for the United States. Looked at another way, Mexico has about 0.7 acres of arable land per person compared to 1.9 acres for the United States.

Water Is Important

"Water and water use have played an important role in Mexican agricultural development and will play an even greater role as Mexico faces increasing conflict over water usage," says Link. "About 10 percent of arable land in the United States is irrigated compared to 20 percent for Mexico. Much of Mexico's irrigation water is from surface storage. Thus, the availability of water for irrigation is highly dependent on rainfall."

Over half of Mexico's cropland is in the rain-fed central highlands. In this region, rainfall varies widely and is often irregular, with most of it falling from July to October. And while most crops in this region are grown under rain-fed conditions, there is some supplemental irrigation.

The United States Is a Much Wealthier Nation Than Mexico, and a Much Smaller Portion of Our Population Works in Agriculture



	United States	Mexico
Population (1989)	248.2 million	84.5 million
Agricultural population (1987)	7.2 million	26.4 million
Portion of labor force in agriculture (1989)	1.3 percent	26.0 percent
Gross domestic product (1989)	$5,200 billion	$201 billion
Gross domestic product per capita (1989)	$20,900	$2,400

	U.S.	Mexico
Arable Land	464 mil.	57 mil.
Land Area	2,264 mil.	475 mil.

Mexico's agricultural sector is extremely diverse. Irrigated, large-farm areas of the arid north produce a wide variety of crops, including wheat, sorghum, oilseeds, cotton, sugarcane, vegetables, and forage crops. Nonirrigated, small-farm areas of the central part of the country tend to rely heavily on staples such as corn and beans. There is some diversification toward feed grains, oilseeds, and fruits and vegetables, particularly near Mexico City. Irrigated pockets produce crops for processing use, such as strawberries. The southern, tropical regions of the country are oriented toward the production of coffee, rice, sugarcane, and traditional plantation crops. Cattle operations are concentrated in the northern and Gulf states, where livestock is largely range-fed. Pork and poultry operations are more decentralized and production is more intensive in modern, commercial operations.

Although Mexico's government has sought to promote self-sufficiency in agricultural production, the country's farmers have been unable to come close to that goal. Mexican farmers have also been pressed into expanding export crop production to gain much-needed foreign exchange earnings.

To satisfy its food needs, Mexico has naturally looked north, says Link.

"Proximity to the Mexican market has allowed the United States to maintain its position as Mexico's principal supplier of agricultural goods," he says. "Yet despite the volume of agricultural trade between the United States and Mexico, a number of problems persist which hamper the expansion of trade. Both governments maintain policies which restrict trade, including import licensing requirements, tariffs, and strict animal and plant health regulations."

The Fruit Fly: A Pesky Problem

As they take on the agricultural issues involved in a free-trade agreement, U.S. and Mexican negotiators are already encountering a pesky problem that simply can't be brushed away—the Mexican fruit fly.

From Mexico's point of view, in fact, the fly may be the mightiest menace to the expansion of its farm exports under a free-trade agreement.

"The Mexican Fruit Fly is the most serious pest limiting the importation of fresh fruits from Mexico," says ERS economist John Link. "The pest has been a recurrent problem in the citrus-producing areas of Texas along the Mexican border and is frequently detected in urban areas of southern California. This pest has the potential to adversely impact the fruit producers in California, Arizona, Texas, and Florida." The flies eat into a fruit, leaving it blemished and unmarketable.

USDA's Animal and Plant Health Inspection Service (APHIS) has worked with Mexican officials for many years to suppress and contain the threat posed to the United States by the Mexican Fruit Fly. And some success can be claimed by the human combatants in this war.

"Two areas of progress have been the development of commodity treatments for several fruits and the establishment of a zone free of fruit flies in the Mexican state of Sonora," says Link. "Due to these efforts, Mexico has been able to ship otherwise prohibited products to the United States under a preclearance program."

Mexican apples, grapefruits, oranges, peaches, and tangerines exported from a specific area of Sonora can enter the United States without a quarantine treatment.

"This program depends upon continual surveillance for fruit fly pests, strict quarantine inspection at major points of entry, and a rapid emergency response effort involving industry, APHIS, and the Mexican Secretariat of Agriculture and Water Resources," says Link.

Other Mexican produce items require specific treatments or inspections before entering the United States.

"Mexican-grown mangoes may be exported to the United States provided they have undergone a hot water dip treatment for fruit flies," says Link. "There are 45 hot water dip treatment facilities located in packing plants in the mango-growing areas of Mexico."

These treatments are supervised by employees of APHIS, which is reimbursed by Mexican mango exporters.

Mexican exports of citrus to the United States must be pre-inspected under APHIS supervision.

"The citrus types eligible for this program are grapefruit, oranges, and tangerines originating from certain Mexican states," says Link. "The pre-inspection program was developed in 1985 and is fully funded by Mexico's citrus exporters. Here again, the major pest of concern is the Mexican fruit fly."

Avocados are another matter. The United States prohibits imports of avocados from Mexico because of the plant pests that infest the avocado in Mexico, but which do not occur in the United States or have a very limited distribution here.

"Mexican avocados are attacked by a complex of insect pests including various seed weevils, fruit flies, and a seed moth," says Link. "The seed weevils and seed moth are serious pests which could infest avocados anywhere they are grown in the United States."

Mexican avocados could be allowed entry into the United States if approved pest-free areas were established for the seed pests and fruit flies, but a Mexican effort to set up such pest-free zones has failed.

Overall, the Mexican fruit fly has been the most serious pest in Mexican agriculture since the Mediterranean fruit fly was first found in Mexico in 1977. It took 13 years to contain the Medfly's northward movement, eradicate it from Mexico, and push it further south into Central America.

Also affecting trade are U.S. and Mexican border processing procedures and inadequate infrastructure in Mexico.

"As the volume of bilateral trade has increased, transportation and other infrastructure problems at the border and in Mexico have surfaced as obstacles to trade expansion," says Link. "Mexico's transportation system has been unable to handle the large increase of trade in recent years and if not improved, will continue to limit trade volume between the two countries."

In addition, administrative processing procedures on both sides of the border have created problems at times.

But a free-trade accord may be of little help—at first, anyway—to another major obstacle to increased trade.

Poverty Persists

"From 1983 to 1988, Mexico experienced an average annual decline of 2.5 percent in real per capita income," says Link. "Per capita income increased slightly in 1989 and is expected to rise more quickly during the early 1990's."

The relative poverty of Mexico is reflected in the kinds of imports purchased directly from the United States by the Mexican government, and suggests that free trade may not quickly result in much greater U.S. sales of high-value agricultural products—unless Mexican per capita income rises significantly.

"The Mexican government plays a direct role in trade as an importer and exporter of agricultural products," says Link. "In 1988 about 41 percent of agricultural commodities imported were imported by the government."

The major commodities and percentage (of each item) imported by the government were: wheat, 96 percent; corn, 73 percent; sorghum, 51 percent; soybeans, 20 percent; and beans, 9 percent. And the government acted as agent for about 47 percent of the cattle imported. The Mexican government also acted as exporter for about 8 percent of the nation's agricultural commodity exports. The major commodities (and percentage of total exports of that commodity) that the government exported were: coffee, 11 percent; tobacco, 92 percent; wheat used for seed, 100 percent; and honey, 92 percent.

The government's role in trade, however, declined sharply in 1989 and 1990.

The shopping list could add more high-value items if a free-trade agreement is signed and starts to take hold. By creating larger and freer markets for Mexican goods (agricultural and otherwise), incomes should rise and allow the Mexicans to buy more American goods. The trade-expanding (and presumably income-expanding) effects of a free-trade accord could also include Canada (if it joins a free-trade agreement with the United States and Mexico).

An agreement could go a long way toward solving one of the biggest problems between the United States and Mexico—illegal immigration.

"With 18 percent of the Mexican labor force unemployed and an additional 40 percent underemployed," says Link, "there is a continuing incentive to make the journey north to the United States."

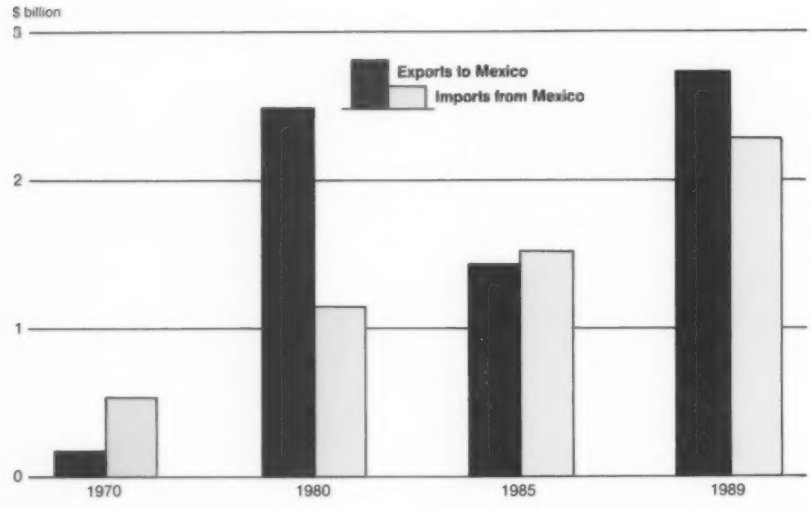
On the U.S. side, opposition to an agreement has already been voiced by some American produce interests. Some growers in southern regions of the United States—from California to Florida—could lose a seasonal advantage if complete access to American markets was granted to Mexican fruits and vegetables.

On the other hand, support for an agreement has been voiced by grain and oilseed producers.

And if agreement can be gained (to include Canada as well), there is an enviable prize awaiting: a North American "Common Market" richer and more populous than the European Community. □

[Based primarily on information provided by economist John Link of the Agriculture and Trade Analysis Division, Economic Research Service.]

U.S. Agricultural Trade With Mexico Has Increased Substantially Over the Last 20 Years



REPORTS IN THE NEWS

Input Industries: A 20-Year Review

This report describes the agricultural input industries during the 20-year period of 1966-86. The report's authors also analyze likely future trends in the industries.

The seven major agricultural inputs covered in this report are: fertilizer, pesticides, energy, livestock feeds, credit, farm machinery, and hired farm labor.

- Total U.S. **fertilizer** use rose from 32 million tons in the mid-1960's to a peak of 54 million tons in 1981, but then dropped to 44 million tons in the mid-1980's. Nitrogen is the dominant purchased nutrient.
- **Pesticide** sales to farmers rose from $0.9 billion in 1966 to $3.5 billion in 1986, after adjusting for inflation. Farmer use of pesticides rose from 353 million to 475 million pounds annually.
- The food and fiber sector accounts for 10-15 percent of all U.S. **energy** consumption, with farms using 3-4 percent.
- **Credit.** Farmers' outstanding debt (excluding operator household and crop loans from the Commodity Credit Corporation) rose from $36 billion in 1965 to $193 billion in 1983, then fell to $143 billion in 1987.
- **Farm machinery** production, based on an index value of 100 in 1967, rose to a peak of 146 in 1979, but plunged to a low of 70 in 1983, before rising to 75 by 1985.
- **Hired farm labor** dropped by almost 70 percent from 1950 to the mid-1980's. At the same time, farm output almost doubled and output per worker-hour rose sixfold, because of other purchased inputs.

Seven Farm Input Industries, Joseph R. Barse, editor. Published September 1990; 113 pages; $11 ($13.75 to non-U.S. addresses).

Greenhouses, Nurseries Boom

The greenhouse and nursery industry is one of the fastest growth sectors in agriculture. In 1988, grower sales reached $7.6 billion and retail consumer sales $30 billion.

This statistical bulletin provides analysis of trends and changes important to growers, wholesalers, retailers, industry associations and consultants, Congress, government agency and university researchers, consumers, and others.

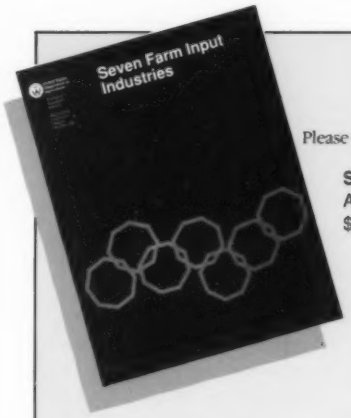
From 1978 to 1987, the total value of sales for greenhouse and nursery farms, as well as the average sales per farm, has doubled. The 1987 U.S. Census of Agriculture reported that greenhouse and nursery farms (including those growing mushrooms, greenhouse vegetables, and flower and vegetable seeds) had average annual sales of $154,818 per farm in 1987, up 44 percent from 1982.

This places the sector at the top of the list in terms of gross cash receipts per farm.

Among other findings during the 1978-87 period were:

- Sod (turfgrass) sales rose 125 percent to $392 million.
- Bedding plant sales jumped 187 percent to $818 million.
- Cut flower and cut florist greens sales rose 69 percent to $594 million.
- Foliage and flowering plant sales increased 56 percent to reach $1.3 billion. Flower and vegetable seed sales gained 64 percent to reach $79 million.
- Bulb sales increased 6 percent to $33 million.

Floriculture and Environmental Horticulture Products: A Production and Marketing Statistical Review, 1960-88, by Doyle C. Johnson. Published September 1990; 245 pages; $14 ($17.50 to non-U.S. addresses).



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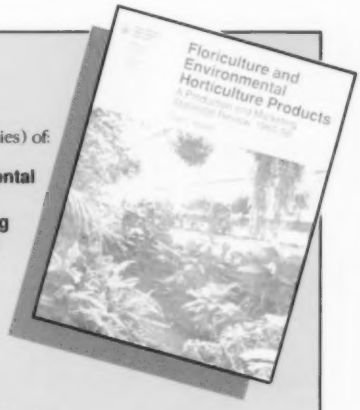

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USDA Surveying Farm Chemical Usage

Food safety and water quality are two issues that have been receiving a lot of attention recently.

One difficulty in dealing with these issues, USDA analysts say, is the scarcity of information about current use of chemicals in agriculture. But plans are being made to gather such data and produce a detailed analysis of chemical and nonchemical practices.

Much Government activity is focused on President Bush's Water Quality Initiative, which he first announced during the 1988 Presidential campaign. A related program is USDA's Food Safety Data Initiative. Several of the Department's agencies have roles in that project.

Current plans call for the project to include the following activities:

* The National Agricultural Statistics Service (NASS) will collect data on farm use of pesticides, other chemicals, and other inputs, as well as production practices.

* The Economic Research Service (ERS) will analyze the data to determine the impact that various regulations and production practices might have on U.S. agriculture, the Nation's food supply, and consumers.

* The Agricultural Marketing Service (AMS) will coordinate, with various States, surveys of chemical residues on foods—initially fresh vegetables and fruit.

* The Human Nutrition Information Service (HNIS), using national food consumption surveys plus data collected by NASS and AMS, will determine potential residue exposures for specific foods and different groups of people.

"USDA's food safety initiative is intended to strengthen the Government's ability to respond to food safety concerns and to protect the public health," says Sam Rives of NASS.

In the fall of 1990, NASS began a survey of the types and amounts of pesticides and fertilizers applied to vegetable crops in five States—California, Florida, Michigan, New York, and Washington.

Chemical technology has played an important role in the revolution in agriculture.

"The States selected are major producers of fresh vegetables," Rives says. "Also, we sought a good geographical distribution, to include a variety of products harvested under different growing and seasonality conditions and various pesticides and usage patterns."

ERS will analyze the data collected. "We'll look at the economic implications of alternative pesticide policies, programs, and practices," says ERS economist John Schaub.

The ERS analysis also will include possible effects on Government program objectives and costs, food prices, and farmers' production costs. Both chemical and nonchemical alternatives for combatting agricultural pests will be studied.

About 4,000 producers of vegetables are being interviewed. They represent a statistical sample of the growers in the major producing States. NASS trained about 150 part-time interviewers for the project. Cooperation from the producers has been excellent, as they recognize the need for factual data on the use of farm chemicals, NASS officials say.

Plans call for surveying fruit producers in six States the second year, all major vegetable-producing States the third year, and all major fruit-producing States the fourth year. Data for field crops in major producing States will be collected every year.

"We are developing an agricultural pesticide use information data base that will provide State-level use statistics," Rives says.

"We have had only limited statistically reliable information about what chemicals are used, and in what amounts, by U.S. farmers," he adds. "Sources of data on which to scientifically base decisions and policies with respect to pesticide use and residues in the food supply have been scarce."

The vegetable survey is only one of the surveys NASS is conducting to obtain increased information about pesticide use. This year additional, quantitative chemical-use information is being gathered for corn, soybeans, cotton, wheat, rice, and potatoes.

USDA's pesticide-monitoring program will supplement, not duplicate, efforts by the Food and Drug Administration (FDA). Tentative plans call for expansion of the USDA program in future years to include wheat, rice, milk, dairy products, nuts, and some processed food products.

Meat, poultry, and egg products are not included in the plans because they are covered in other residue-monitoring programs, notably by USDA's Food Safety and Inspection Service (FSIS).

Chemicals Important to Farmers

Pesticides are defined as chemical agents used to control insects, diseases, weeds, rodents, fungi, and other pests on plants, vegetables, fruits, and animals. They protect commodities by preventing various types of damage and other losses.

Pesticides may be applied to crops as sprays, dusts, granules, or fog. They can be injected into the soil, broadcast over a field, or sprayed from the air or ground level.

More than 45,000 pesticide products are on the market, with about 600 chemical compounds making up the active ingredients. The Environmental Protection Agency (EPA) has approved about 350 for use on food products. Others are used in nonfood applications, such as disinfectants, and to control termites and rodents.

"The past four decades have seen a remarkable scientific revolution in agriculture," says Craig Reed, director of the AMS

Commodities Scientific Support Division. "Chemical technology has played an important role in this revolution, which has produced fundamental changes in major sections of the U.S. economy. It has brought significant benefits to the American consumer in terms of an abundant, low-cost, high-quality food supply."

He adds that the public has become more concerned in recent years about the presence of chemicals in the environment and the food supply. "The public is often not fully informed," he added, "and retains a perception that pesticides present a serious public health threat."

Pesticides are seldom found at unsafe levels in foods. Of the 14,500 food samples tested by the FDA in 1987, 95 percent had no excessive amounts of residues and 57 percent had no detectable residues at all. Less than 1 percent had residues exceeding established tolerances and about 4 percent had residues for which no tolerances had been set.

Major farm States, such as California and Florida, conduct their own pesticide residue programs, which complement Federal efforts.

Given sufficient development time, it is possible that less-toxic chemical and nonchemical alternatives, including the products of biotechnology and bioengineering processes, may be developed to replace some popular pesticide products, according to ERS economist Phil Szmedra. □

1991 Reports Calendar

January - June

Titles of Situation-Outlook and other periodic reports issued by the Economic Research Service are printed in color. Summaries of reports are released at 3 p.m. ET on the dates shown. Copies of complete reports are due off press about a week later.

*The **World Agricultural Supply and Demand Estimates** reports, issued by the World Agricultural Outlook Board, are also shown in color. These reports are issued in their entirety at 3 p.m. ET on the indicated dates.*

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15	16 Agricultural Resources[1] Milk Production Turkey Hatchery	17	18 Agricultural Outlook	19 Dairy U.S. Agricultural Trade Update Cattle on Feed Livestock Slaughter
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MAY

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		1
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20 Wheat Catfish	21 U.S. Agricultural Trade Update Sugar Market Statistics	22
27	28 Cotton & Wool	29 Exports

[1]The Agricultural Resources report focuses on Inputs February 13, Agricultural Land Values Summary April 16, and Agricultural Land Values and Markets June 21.

Titles of reports issued by the National Agricultural Statistics Service are printed in black. Complete reports are released, most at 3 p.m. ET, on the dates shown.

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For details on electronic access to reports of the Economic Research Service or National Agricultural Statistics Service, call 202-447-5505.

MARCH

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
				1 Egg Products Poultry Slaughter
4	5	6 Dairy Products	7 Celery Vegetables	8
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JUNE

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
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24 U.S. Agricultural Trade Update Vegetables Eggs, Chickens, & Turkeys	25 Agricultural Chemical Usage	26	27 Acreage Grain Stocks Almond Prod.	28 Agricultural Prices Agricultural Prices, Annual Hogs & Pigs Peanut Stocks & Processing

Alternative Crops Help Farmers Look to the Future

Alternative agricultural crops—those which can be grown in addition to or in place of more conventional commodities—offer American farmers a number of ways to diversify their output, bolster their competitive advantage, and increase their income. This article, the second of two parts, explores the opportunities some U.S. farmers might find in floriculture, the greenhouse and nursery trade, and specialty commodities.

The floriculture and greenhouse and nursery sectors present farmers with several such possibilities. "Strong consumer demand has transformed the greenhouse and nursery industry into one of the fastest growing sectors in U.S. agriculture," explains economist Doyle Johnson of USDA's Economic Research Service. Increasing population, higher disposable incomes, and changing lifestyles are fueling this growth.

"Individuals are buying more flowers, plants, trees, and shrubs to beautify their surroundings," Johnson notes, "and so are businesses and governments working to enhance parks, highways, office buildings, hotels, and restaurants." Grower cash receipts for the nursery sector totaled more than $7 billion in 1989, excluding Christmas trees, seeds, and food crops grown under cover.

The nursery sector took in $7 billion in 1989.

U.S. producers of major **cut flowers** (roses, carnations, chrysanthemums, and gladioli) and **cut greens** (leatherleaf and other decorative ferns) face keen competition from growers in Colombia and several other Latin American countries, who are modernizing their facilities and exporting ever larger quantities to the United States. Also, their lower labor and energy costs help keep their prices well below those of U.S. producers, offsetting their higher transportation expenses.

The United States does not limit the quantities or dollar amounts of cut flower imports. However, Johnson notes that a tariff of 8 percent of the U.S. Customs value is placed on them, and at times specific country or flower anti-dumping duties go into effect—actions that do restrict imports. Also, since illegal drugs have been found in flower boxes from Central and South America, drug inspections are now performed both in the country of origin and at ports of entry, hampering shipments of the highly perishable cut flowers.

Photos by Priscilla Glynn

The growing nursery trade gives some producers opportunities to diversify into landscaping products.

But Johnson explains that despite the stiff competition, domestic growers have an excellent chance to produce unusual flowers to satisfy consumers' appetite for variety. Also, their nearness to regional markets gives these growers a distinct advantage over their foreign competitors, because it allows them to stay in tune with local market trends and deliver high-quality products swiftly and consistently. In 1989, U.S. growers sold 61 percent of the cut flowers and 87 percent of the cut cultivated greens.

Forty-two States now produce commercial quantities of cut flowers and decorative greens. Producer receipts for cut flowers are estimated at $527 million for 1989, compared with $404 million in 1986. Similarly, grower receipts for cut cultivated greens reached $111 million in 1989, up 29 percent from 1986.

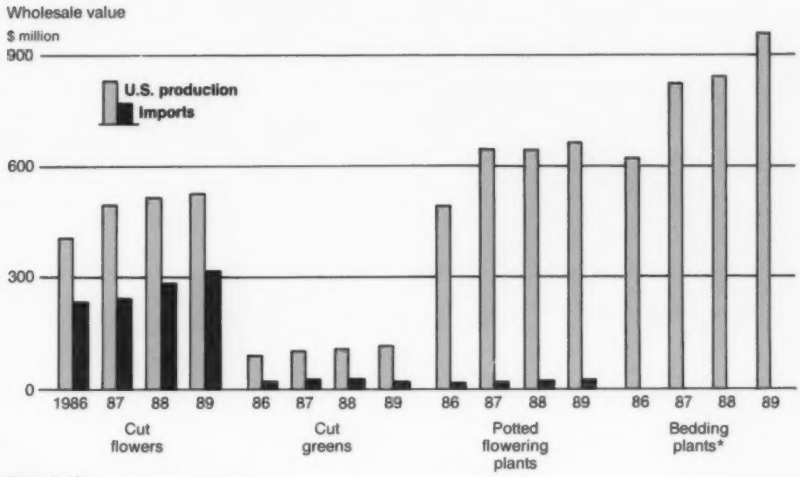
U.S. cut flower production is becoming increasingly concentrated in the Sun Belt. The Southern and Western States owe their competitive advantage in this area to their favorable climates (permitting widespread outdoor production), proximity to major metropolitan areas (offering many market outlets), availability of workers, and rapidly expanding populations.

The **potted flowering plant** subsector includes African violets, chrysanthemums, lilies, poinsettias, azaleas, geraniums, and many other items. Producers can cut and sell individual blooms, or the entire plant. There are now 46 States growing commercial quantities of potted flowering plants, with California supplying about 18 percent of all U.S. commercial production.

"With consumption tripling over the past decade," Johnson states, "this category has emerged as one of the fastest growing areas in the floriculture sector." U.S. grower cash receipts reached an estimated $661 million in 1989, up from $492 million in 1986.

Import value totaled $19.9 million in 1989, up a hefty 76 percent from 1986. But despite the import surge, U.S. growers

Demand for Some Floriculture and Horticulture Products Has Grown Steadily in Recent Years



*Imports minor.
Source: Economic Research Service, USDA.

have not relinquished their grip on the lion's share of this market—97 percent.

The **bedding and garden plant** category includes vegetable plants sold in flats, pots, and hanging baskets, and a wide array of flowering and leafy plants. Grower cash receipts reached $964 million in 1989, up 15 percent from a year earlier.

Commercial production of bedding and garden plants exists in most States. Here again, California leads with 19 percent of U.S. production.

Such widespread cultivation is possible because nearly all crops in this category are grown in greenhouses. "Automated production facilities—where temperature, light, irrigation, and fertilizer and insecticide applications are carefully controlled—have become commonplace," Johnson states. In addition to more mature plants, some growers are producing plugs and other starter materials or unfinished plants for sale to other producers.

"Foreign countries have not mounted strong competition for the bedding and garden plant market, and are unlikely to do so in the near future," Johnson remarks. This market is also very accessible to new U.S. producers: small-scale growers have started successful businesses with investments of only $5,000-$10,000 by developing unique market niches or providing specialized products or services.

The **foliage plant** subsector is made up of small producers growing potted plants for indoor and patio decoration. Cash receipts for U.S. growers have climbed steadily from about $250 million in the mid-1970's to $560 million in 1989, although potted plant sales have declined recently.

As with potted flowering plants, most States currently have commercial foliage plant operations. Florida with 47 percent and California with 21 percent of total U.S. production dominate this area.

In an effort to lower production costs, many producers (primarily the larger ones) have reduced the area they propagate in the United States by purchasing almost 50 percent of their cutting material from Central and South America, which they then use to grow plants in domestic facilities. In warmer climates, they tend to use inexpensive structures that afford partial protection, such as slat houses and plastic greenhouses.

Foliage imports have increased gradually, reaching about $28 million in 1989. "However, stringent sanitary regulations restrict the importation of finished plants with soil to those from approved nurseries," Johnson points out. This effectively limits imports to cuttings, young plants, and canes (primary stems). He also reports that at least 75 tissue culture laboratories in the United States are working to develop new varieties of tropical foliage, which could further constrain imports.

Nursery products constitute the largest subsector in the greenhouse and nursery industry, accounting for roughly $4 billion (more than half) of its grower cash receipts in 1989. "Although many nurseries produce items typical of floriculture—cut flowers and potted and bedding plants—their mainstays are landscaping products," Johnson explains.

Landscaping products include ornamental and shade trees, evergreens, shrubs, hedges, and groundcovers; fruit and nut trees and berry plants, for commercial and home use; plants of all sorts used for windbreaks and other conservation purposes; and seedlings for Christmas tree production and reforestation of commercial, public, or private woodlands and forests.

Although domestic growers control nearly all of this market, imports are edging their way in. "Import value went as high as $147 million in 1989," Johnson remarks, "and will likely expand as more plants and materials are allowed into the United States."

Many of these imports—rootings, cuttings, seedlings, and "lining out" stock suitable for planting outdoors in nursery rows—come from Canada. U.S. exporters also ship significant quantities of nursery stock and related products back to Canada. Johnson anticipates that the recent U.S.-Canada Free Trade Agreement will increase greenhouse and nursery trade between the two nations.

Although annual domestic data are not collected on the **bulb, corm, tuber, and rhizome** subsector, imports have been rising an average of 9 percent a year, going from $54 million in 1983 to $88 million in 1989. Most of these imports are bulbs (tulips, hyacinths, irises, lilies, and narcissus) from Europe. However, corms (mainly crocuses and gladioli), pips (lilies of the valley), tubers (mostly begonias), and rhizomes and other roots (with and without soil) are also imported.

Of the 20 States having significant commercial bulb production, Washington, Oregon, California, New Jersey, Michigan, and Florida are the most prolific—each reported at least $1.5 million in farm sales in the 1987 Census of Agriculture. Production takes place in greenhouses and other facilities where air temperatures and humidity favor plant growth.

Although competition is intense, demand is so strong that some new growers have found markets for specialized crops, especially flowering perennials. Also, many growing operations are a part of, or have a direct marketing link with, nursery firms.

The **flower, vegetable, and nursery seed** subsector is dominated by several large seed corporations. Because seed production—especially flower seed production—is very labor-intensive, U.S. companies have moved many of their operations to Central and South America, the Far East, and Africa to trim labor costs and alleviate other production problems. Flower, vegetable garden, and nursery seed imports have almost tripled since 1983, reaching $126 million in 1989.

Domestic seed production is concentrated in California, Idaho, Washington, and Oregon. Despite keen competition, new producers of specialized and unique seed varieties can carve out market niches.

U.S. imports of greenhouse and nursery products, which topped $500 million in 1989, are expected to keep growing in this decade. Johnson explains that proposed multinational and binational trade accords could greatly accelerate imports of cut flowers, bulbs, and live plants. "It is very likely the United States and Mexico will reach a free-trade agreement within the next year or two, stimulating much higher imports of cut flowers and somewhat higher imports of other floral items," he states.

Retail produce counters now offer a variety of fresh herbs.

The economist explains that imports of certain scarce or very expensive floral and nursery products will rise, lowering prices and whetting consumer demand. Meanwhile, larger imports of traditional cut flowers will compete with domestic supplies. On the other hand, increased imports of growing materials should trim the input costs of U.S. producers.

Total U.S. exports of greenhouse and nursery products rose from $81.4 million in 1986 to an estimated $143.7 in 1989. And while Johnson expects to see moderate growth in all product categories, he anticipates that proposed reductions in European tariffs and tariff barriers will heighten demand for U.S. cut flowers, cut greens, and live plants.

Demand for Exotic Produce Grows

Specialty commodities include fresh and processed fruits and vegetables, essential oils, and herbs. Cash receipts from farm marketings of fruits, vegetables, and tree nuts increased at an average annual rate of 5.6 percent from 1973 to reach $17.1 billion in 1987.

U.S. imports of these specialty commodities were valued at $5.7 billion in 1988, slightly more than double their import value in 1979. While the import growth rate of all of these commodities averaged 7.9 percent per year, the growth rate of several commodity classes—such as frozen vegetables, fresh fruits, fruit juices, and wine—was somewhat higher, ERS economists explain.

"For example, **fruit and vegetable** imports have risen markedly," notes economist Katharine Buckley of ERS. "Imports for immediate consumption—fresh, frozen, and canned items—make up the bulk of the import value, a circumstance resulting from several industry trends."

As with floriculture and greenhouse and nursery items, U.S. imports of fresh and frozen fruits and vegetables come mostly from Mexico and other Latin American and Caribbean countries whose tropical, semitropical, and temperate climates allow them to grow a wide variety of produce during much of the year.

"Investment by large U.S. producers and other market participants has spurred production expansions in some of these countries," Buckley explains, "as the Chilean grape and Mexican winter fresh vegetable industries demonstrate." In addition, several U.S.-based multinational corporations have set up freezing operations in Latin

America, where lower wages make more cultivation and harvesting by hand affordable.

"This increased U.S. investment has contributed significantly to the 17-percent annual average growth in frozen vegetable imports," Buckley states. Domestic canned fruits and vegetables—particularly tomato products, peaches, and fruit cocktails—compete with lower-cost foreign products and subsidized exports in both U.S. and international markets. The economist also notes that a trade agreement between the United States and Mexico would increase their bilateral trade in fruits and vegetables. It could also open more opportunities to U.S. investors in Mexico to expand their imports of off-season produce.

But Buckley explains that the influx of Asian and Hispanic immigrants has altered the U.S. produce market. Items previously unknown in this country are now being stocked to satisfy the tastes of a changing population, and increasing demand for them is creating some opportunities for U.S. producers.

So, although domestic fruit and vegetable production is expanding, much of the growth is occurring in exotic produce, such as the carambola (star fruit), jicama, chayote, guava, cherimoya, and tomatillo. In addition to Florida and California, production of new kinds of fruits and vegetables is moving to such unlikely places as Arizona, New York, New Jersey, and Maryland. Buckley explains that growers are beginning to relocate to these States because their large ethnic populations and proximity to major markets help to ensure demand for these unusual items.

However, Buckley cautions that the geographic and climatic constraints inherent in fruit and vegetable production will limit U.S. expansion. Moreover, well-established supply channels for many traditional fruits and vegetables complicate new growers' entry into the system, because the current participants have built up credit histories and set up long-term contract arrangements.

Essential oils are extracted from a variety of fruits, vegetables, herbs, spices, nuts, flowers, and other plants to obtain concentrated flavorings and fragrances used in food and beverage manufacturing and the cosmetics and toiletries industries. Oils extracted from fruits and vegetables are often derived as byproducts from pits, seeds, husks, skins, or rinds, while oils extracted from nuts, herbs, flowers, and other plants are usually the primary products.

"Although the import value of essential oils has grown an average of 4.3 percent per year, their share of the total import value of the specialty commodities we examined has actually been declining," Buckley reports. In 1987, essential oil imports were valued at $98.5 million and represented 3.8 percent of the total specialty crop import value. In 1988, they were valued at $150.6 million, but made up only 2.6 percent of specialty crops' total value. Buckley notes that lower-cost artificial flavors and extracts are making constant inroads into this market.

Herbs are commonly used in culinary, medicinal, cosmetic, industrial, decorative, and fragrance applications. For many years they have been processed into spices, essential oils, and oleoresins for use in food seasonings, teas, dyes, creams, and lotions.

"Fresh-cut herbs are relatively new to produce markets, but rising consumer interest in using them rather than dried herbs is encouraging commercial production," notes Buckley. As in the case of fruits and vegetables, the country's growing ethnic population should ensure demand for a variety of fresh herbs not previously available in this country.

The highly perishable nature of fresh herbs constrains imports. And, unlike specialty crops, herbs can be grown in various climates on small plots of land. They can also be grown in greenhouses, permitting year-round production throughout the United States. These factors have prompted interest in both small- and large-scale production. "Many fresh herb producers have chosen to set up shop close to major metropolitan areas so they can take advantage of local demand, guarantee product freshness, and minimize packaging and transportation costs," Buckley explains.

At the moment, rapidly expanding markets and supply variations caused by their perishability are creating considerable volatility in fresh herb prices. However, Buckley points out that prices will likely become more stable if local supplies continue to increase or if prices rise high enough to offset transportation costs.

Farm Bill Offers Incentives

The economists explain that the success of any alternative agricultural enterprise depends on a long-range commitment to its research, development, and commercialization. Agricultural programs and policies can be modified to encourage innovation, and certain provisions of the Food, Agriculture, Conservation, and Trade Act of 1990 may prompt producers to explore some alternatives.

"The bill's increased funding for competitive research grants offers greenhouse and nursery producers their best hope of generating new crops," states Johnson, "and the America the Beautiful Foundation, established to promote tree planting, will directly benefit nurseries."

In addition, the Acreage Reduction Program for major crops such as wheat, corn, and cotton has been altered to allow producers flexibility to grow most crops except fruits or vegetables on 15 percent of their crop acreage bases—the triple base option. The bill also authorizes a new oilseed marketing loan that establishes a loan rate of $5.02 per bushel for soybeans and 8.9 cents per pound for sunflowerseed, rapeseed, canola, flax, mustard seed, and safflower. □

[Based on information provided by economists Katharine C. Buckley and Doyle C. Johnson, Commodity Economics Division, Economic Research Service, and Michael R. Dicks, formerly of ERS and now a professor of agricultural economics at Oklahoma State University.]

U.S. Importing Much of Its Fertilizer

U.S. competitiveness in grain export markets has been spurred with a little help from Canadian potash ore and Soviet ammonia.

The reason: Using low-cost inputs for commercial fertilizers from these and other countries has helped U.S. farmers maintain high productivity. This productivity, in turn, has allowed the United States to be a major grain exporter.

"The nutrient inputs to manufacture needed fertilizers are increasingly obtained from other countries for reasons of economy," says economist Gary Vocke of USDA's Economic Research Service.

Of the three major ingredients for the production of fertilizer, in fact, only phosphate remains the one input provided exclusively by domestic sources to American commercial fertilizer producers. And even phosphate will likely be imported in another decade.

The two other main fertilizer inputs—ammonia and potash—have been imported for years.

The industry draws on the lowest cost sources of inputs.

"The United States became a net importer of potash in the 1960's, and now imports 80 to 85 percent of potash used for fertilizer," notes Vocke. "For ammonia (from which nitrogen is obtained), the shift occurred in the 1980's, with imports now comprising about 10 percent of nitrogen fertilizer use."

The story of this change is not simply an economic one, however. It involves the very vitality of U.S. agriculture.

Mining the Soil

"Without replacing nutrients, U.S. farmers would be mining their soils of essential substances, eventually reducing productivity and raising per unit production cost," says Vocke. "As a result, U.S. exports would be uncompetitive."

Before widespread availability of commercial fertilizers, farmers were not replacing the nutrients in crops and livestock sold to the cities. The reason was simple enough. Recycling bulky, organic waste materials back to the farm required too much energy for transportation.

"Despite on-farm recycling of livestock manure, farmers were gradually depleting the fertility of their soils and lowering the nutrient quality of their crops," says Vocke.

For example, he says, the 1938 USDA Yearbook, *Soils and Men*, reported a general decline in the nitrogen content of soils over time with the common farming practices of the day. In the Midwest, the reported loss was most rapid in the first 20 years of farming virgin land, amounting to 25 percent of the original quantity. A further 10-percent loss occurred during the second 20 years, and a loss of 7 percent more was registered over the third 20 years.

To some extent, of course, "the mining of soil nutrients on diversified crop-livestock farms could be slowed by returning livestock wastes to the soils growing the feedstuffs," says Vocke.

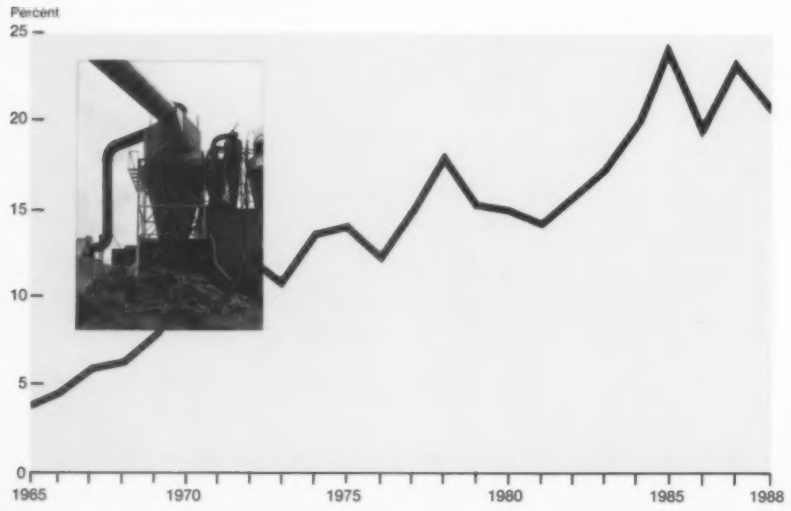
But on-farm recycling of manure has declined because the percentage of farms with livestock has fallen substantially. And such recycling is less common as livestock are increasingly raised in large confinement production units separate from where their feedstuffs are grown.

"The expense to return wastes to the soil of the cash-grain farmer is prohibitive," says Vocke. "Furthermore, there is no possibility of recycling nutrients in corn and the other crops grown for export."

With the development of concentrated fertilizers manufactured from natural nutrient deposits, he says, "farmers were able to stop depleting the fertility of their land. Fertilizer consumption rose rapidly. Productivity rose. Now, U.S. fertilizer use has leveled off, with year-to-year fluctuations."

Manufacture of the needed fertilizers begins with the basic materials of ammonia (from natural gas), phosphate rock, and potash ore. These materials are used to prepare intermediate and finished fertilizer products. The availability and cost of these natural resources determine whether fertil-

More Than 20 Percent of the Fertilizer Used by U.S. Farmers Has Been Imported in Some Recent Years



izer raw materials are obtained domestically or imported.

Potash From Germany

"Potash fertilizer production started with mines in Germany in the 1860's, and until the 1940's that country was the principal potash source for world trade," says Vocke. "During World War I, the blockade of Germany cut off exports to the United States, encouraging the U.S. Government to explore for potash."

Deposits were found in New Mexico, and mining started in 1931. This competing source of potash lowered prices for U.S. farmers. By 1956, production had expanded enough for the United States to begin exporting potash.

"At the same time, the Eastern United States continued to import potash from Europe because of transportation advantages over New Mexico," Vocke says.

The impact of transportation costs was illustrated once again after potash mining began in Canada in 1958. By 1963, Canadian exports had replaced New Mexican potash in the Upper Midwest because it cost less to bring in Canadian potash, leading to U.S. dependence on imports.

However, because of their transportation edge for other markets, New Mexico mines continued to supply the Southeastern United States and some export markets through West and Gulf Coast ports.

"The U.S. shift to becoming a net importer of nitrogen (from ammonia) during the 1980's appears to be a new long-term trend," says Vocke. "The earlier trend toward net exports in the 1960's and early 1970's followed rapid expansion of U.S. manufacturing capacity. The reversal of this trend came with rising natural gas prices."

U.S. nitrogen imports began with guano from Peru and nitrates from Chile. These nitrogen sources were replaced by nitrogen fertilizers made with ammonia from coke-oven gas, and later, ammonia from the Haber-Bosch synthetic nitrogen process developed in Germany.

"Coal was the main input in synthetic nitrogen production until the 1940's, when it was displaced by naptha (a petroleum product), which in turn was replaced by natural gas in the late 1950's," says Vocke. "Low-cost natural gas and superior manufacturing technology allowed the United States to become a net exporter of nitrogen."

Cheaper Ammonia Imports

But when the United States deregulated natural gas prices during the 1970's, U.S. ammonia producers with old, inefficient plants lost out to foreign suppliers.

"U.S. natural gas prices are now higher than those of countries where there are no good alternative uses for natural gas, such as the Soviet Union and nations in the Middle East," says Vocke. "Competing sources of ammonia can reduce the cost of nitrogen fertilizer to U.S. farmers, helping them to remain competitive in world grain markets."

Before 1960, most of the world's ammonia production was in the industrial countries of Western Europe, the United States, and Japan. Now, ammonia manufacture is increasing in those countries with cheap natural gas as new plants are constructed.

Phosphate—the third major input into commercial fertilizer—has been supplied from large, high-quality phosphate ore reserves in Florida and North Carolina.

Even here, though, the time is coming when imports will be needed.

"U.S. exporters are looking at higher production costs with the exhaustion of high-quality ore reserves and the higher costs associated with the opening of new mines," says Vocke.

In the 1990's, Vocke adds, "rising costs due to environmental restrictions and lower grade ore are expected to limit opening of new mines in Florida and, hence, limit exports. The principal environmental difficulty is disposal of wastes from the initial processing of the ore at the mine."

An even more serious problem is that of supply. The U.S. Bureau of Mines forecasts that the supply will be adequate to meet demands from domestic consumption and export through 1995. Beyond that time, U.S. supplies will only be enough to meet domestic needs. And after the year 2000, if domestic phosphate rock production costs continue to rise—making investment in new phosphate mines uneconomic—imports will be needed.

Even though fertilizer use has not been increasing over the last 15 years, there is mounting concern about the environmental consequences of fertilizer application.

Despite these pressures, "fertilizers will continue to be important to maintain soil fertility for cash-grain farming. That grain is critical to feed the world's expanding production of pigs and poultry and to supply foodstuffs to the world's growing urban population. In both cases, recycling of nutrients back to the soils where the crops were grown is prohibitively expensive because transporting bulky, organic waste materials back to the farm requires too much energy."

As incomes rise around the world, people consume more meat, usually pork and poultry. World pork production now surpasses beef, and poultry is growing rapidly. From the 1970's to the late 1980's, beef consumption increased 8 million tons while pork consumption increased 24 million tons and chicken 18 million tons.

"These trends will continue, and these animals will increasingly be raised in specialized confinement operations separate from where their feed is grown," says Vocke. "Their wastes will not be recycled to the soils growing their feedstuffs."

These trends suggest that an ever-increasing quantity of nutrients will not be recycled. "World agriculture will become more and more dependent on nutrient resources outside of agriculture, and the world's fertilizer industry will become progressively more important in sustaining and improving diets around the world." □

[Based primarily on information provided by economist Gary Vocke of the Agriculture and Trade Analysis Division, Economic Research Service.]

Demographer Reviews 40 Years of Change

A combination of chance and mutual need led Calvin L. Beale of USDA's Economic Research Service to embark on a career as a rural demographer in 1953. At first blush, Beale would seem an unlikely candidate for such a calling. A native of Washington, DC, he had no plans to work in rural population research when he joined government service after graduate work at the University of Wisconsin.

"However, I had been laid off at the Census Bureau when it finished tabulating the results of the 1950 Census, and USDA needed another demographer," Beale recalls. He joined the former Bureau of Agricultural Economics in 1953, and found that he enjoyed researching rural issues so much that he has been with USDA ever since.

Beale moved with his branch to ERS at its inception in 1961. A recipient of USDA's Distinguished Service Award, he is the co-author of Rural and Small Town America. Pennsylvania State University Press recently published A Taste of the Country, a collection of his writings edited by another noted demographer, Peter Morrison. Beale is perhaps best known for discovering the historically unique reversal in rural-urban migration that characterized the 1970's. FARMLINE interviewed Beale about his career.

Farmline: What major trends characterized rural America when you began studying it in the 1950's?

Beale: It was a time of extraordinary change. There was a mass exodus from farming, far beyond that seen during the farm crisis of the 1980's. The number of farms fell by 3 and 4 percent annually, and the number of people living on farms declined by nearly 750,000 per year in that decade.

Yet the nonfarm rural economy grew, and modernization of rural life proceeded rapidly. The major material drawbacks of rural living were overcome by electrification, modern plumbing, central heat, paved roads, and so on.

Farmline: Would you give us a brief definition of "urban," "rural," "metropolitan," and "nonmetropolitan"?

Beale: In census terms, rural people are those who live in the open country and in towns with populations of fewer than 2,500. All the rest are urban. Some 98 percent of all U.S. land area is rural, but it contains only 25 percent of the population.

In general, counties are called nonmetropolitan unless they (1) have an urban nucleus of at least 50,000 people, or (2) qualify as outlying metro counties because they have certain metropolitan characteristics and close commuting ties to a nearby central metro county.

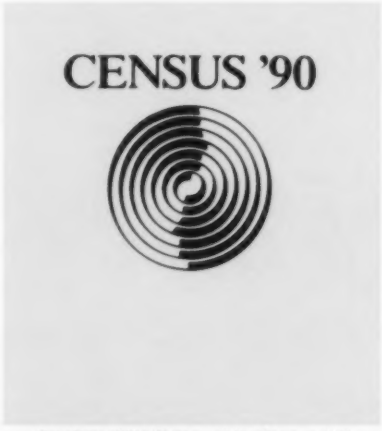
The two concepts—"rural" and "nonmetro"—are somewhat different, but either provides a good approximation of rural and small town America. Between censuses, we have to rely on nonmetro statistics.

Farmline: How have childbearing trends in urban and rural areas changed?

Beale: The premise that urbanites have fewer children than rural people is one of the oldest—and hitherto most valid—demographic observations. Rural ratios of children to women, although falling, were far above those of urban areas in the 19th century. The gap, however, continued to narrow in the 20th century.

Large drops in childbearing were evident in Southern Appalachia by midcentury, and the post-World War II baby boom was mostly an urban phenomenon.

After 1960, rural birth rates declined still further, especially among Catholic farming communities in the Midwest and, later, among minorities. By 1980, rural women 35-44 years old had borne only 11 percent more children per 1,000 women than their urban counterparts.



— Courtesy of the Bureau of the Census, U.S. Department of Commerce

In 1988, for the first time, nonmetro women 18-34 years old did not expect to have any more lifetime births than metro women—a development I never expected to see. However, nonmetro women continue to have more of their children before age 25 than metro women.

But perhaps more significantly, in 1987, the 14 States for which we have abortion statistics reported a ratio of 392 abortions to every 1,000 births in metro areas, compared with only 164 abortions per 1,000 births in nonmetro counties—making the ratio of abortions to births for metro women 2.4 times as large as that for nonmetro women. I think this is the sharpest single social difference between urban and rural people today.

Another interesting feature of recent changes is the decline in natural increase, the margin of births over deaths. The nonmetro rate of natural increase declined every year from 1981 to 1988, and is now much lower than the metro rate.

Although this decline stems partly from changes in the age structure of the rural and small town population (young people are moving away and retired people are coming in), about half of the decrease was caused by an actual drop in childbearing among nonmetro women. These rather low birth rates mean that even modest numbers of people moving out cause population declines in most nonmetro areas.

Farmline: What changes in urban and rural racial and ethnic composition have you observed?

Beale: Before World War I, Blacks made up 14.3 percent of the total rural population. But the exodus of Blacks to urban centers, particularly after 1940 and the mechanization of southern farming, has trimmed this percentage. By 1980, Blacks were just 6.6 percent of the total rural population, but 13.5 percent of the total urban population.

Hispanics and Asians have also sought the cities, so that by 1980, Blacks, Hispanics, and Asians made up 23.4 percent of the urban population, but only 9.5 percent of the rural population. This difference probably widened during the 1980's.

Farmline: Why do you think so many people relocated to rural America during the 1970's?

Beale: They basically wanted to enjoy some of the advantages rural life has to offer—less traffic, lower crime rates, cleaner air, less crowding, and a more natural setting. And the availability of jobs was rather good. A lot of folks felt that the quality of life in rural areas was adequate compensation for somewhat lower earnings.

Farmline: What became of these people? Did they return to the cities?

Beale: Some of them did return during the economic downturn that plagued many rural industries in the 1980's. But most of the people who moved to rural retirement communities and recreational areas in the 1970's have stayed.

From 1980 to 1988, nearly two-thirds of all nonmetro counties recorded net outmigration as 1.97 million more people moved out of these areas than came in. This statistic clearly reflects the impact of the farm crisis and the general recession on economies based on traditional rural enterprises—farming, mining (including oil and gas), and timber industries.

But some 1.94 million more persons moved into the remaining one-third of all nonmetro counties than moved out, bringing the net total nonmetro population loss through migration to 22,000. Most of the population gain can be attributed to the number of people moving to retirement communities, which often are also recreational areas. Urban sprawl and the desire to find cheaper housing also fostered growth in counties located on the fringes of major metropolitan areas.

Farmline: What shifts in educational levels, jobs, and earnings have occurred in rural and urban areas over the past few decades?

Beale: In 1950, only one-fifth of rural adults and two-fifths of urban adults had completed high school—an indication of just how recent a trend mass secondary education is. But the following decades saw a sharp rise in the number of rural students completing high school, so that by 1988, 81 percent of them had done so.

The disparity in education has now shifted to the collegiate level. Twenty-seven percent of metro residents 25-44 years old had finished college in 1987, compared with 16 percent of nonmetro residents.

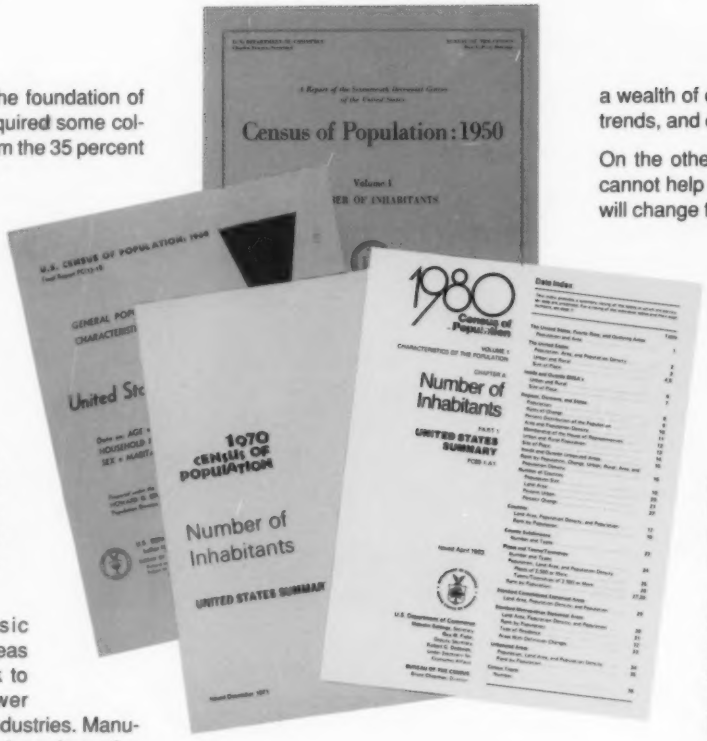
Earnings for male college graduates were 28 percent higher in metro than in nonmetro settings. And although the earnings gap may be partly offset by the higher cost of living in metropolitan areas, we should bear in mind that the difference has widened considerably since 1979, when it was only 14 percent. From 1979 through 1987, somewhat narrower gaps in earnings were also evident between metro and nonmetro women at all educational levels.

The 1980 Census indicated that the median income for rural women was only 80 percent as high as that of urban women. For most occupations, the comparable percentages were somewhat higher—91 percent in food service jobs, 88 percent in factory jobs, and 82 percent in managerial and professional jobs. However, the proportion of women in low-paying jobs is greater in rural and small town areas than in large urban centers, which pulls down the overall percentage.

Farmline: Do the economic problems of rural communities stem from lower educational levels, or from the increasingly urban orientation of the national economy and the consequent decrease in the types and numbers of jobs that can be readily located in rural areas?

Beale: Both, I would say. In the 1980's, 75 percent of the new jobs in the production

sector (which serves as the foundation of most local economies) required some college education, well up from the 35 percent of the previous decade. Moreover, a disproportionately large number of these jobs were located in metro areas, acting as a powerful magnet drawing college-educated young people from nonmetro to metro areas.



Farmline: How can rural communities revitalize their economies and prevent their better educated young people from leaving?

Beale: I think the basic dilemma for most rural areas is to find sources of work to offset declining manpower needs in their traditional industries. Manufacturing often provided such an alternative in earlier decades but, although it remains important, this sector is no longer an expanding part of the economy.

The service sector is now the Nation's fastest growing source of employment. This sector provides many different types of jobs with widely different incomes—everything from relatively well-paying jobs in accounting, law, insurance, and finance, to less remunerative jobs in, say, travel reservations or insurance claims processing.

How do nonmetro counties that have little desirability as retirement or recreational areas attract the better service-related businesses? To what extent can modern computer and communications technology overcome the costs of distance and bring jobs to remote rural areas? This, to me, is the major economic challenge facing rural America today.

Farmline: How has the science of demography changed over the last 40 years? How much has the advent of microcomputers and other technological advances altered things?

Beale: Statistical methods have become more sophisticated, and major advances have occurred in the application of computers to demography. Computers are of great assistance to demographers in making projections, because they enable us to analyze a wealth of data more quickly, study more trends, and examine more hypotheses.

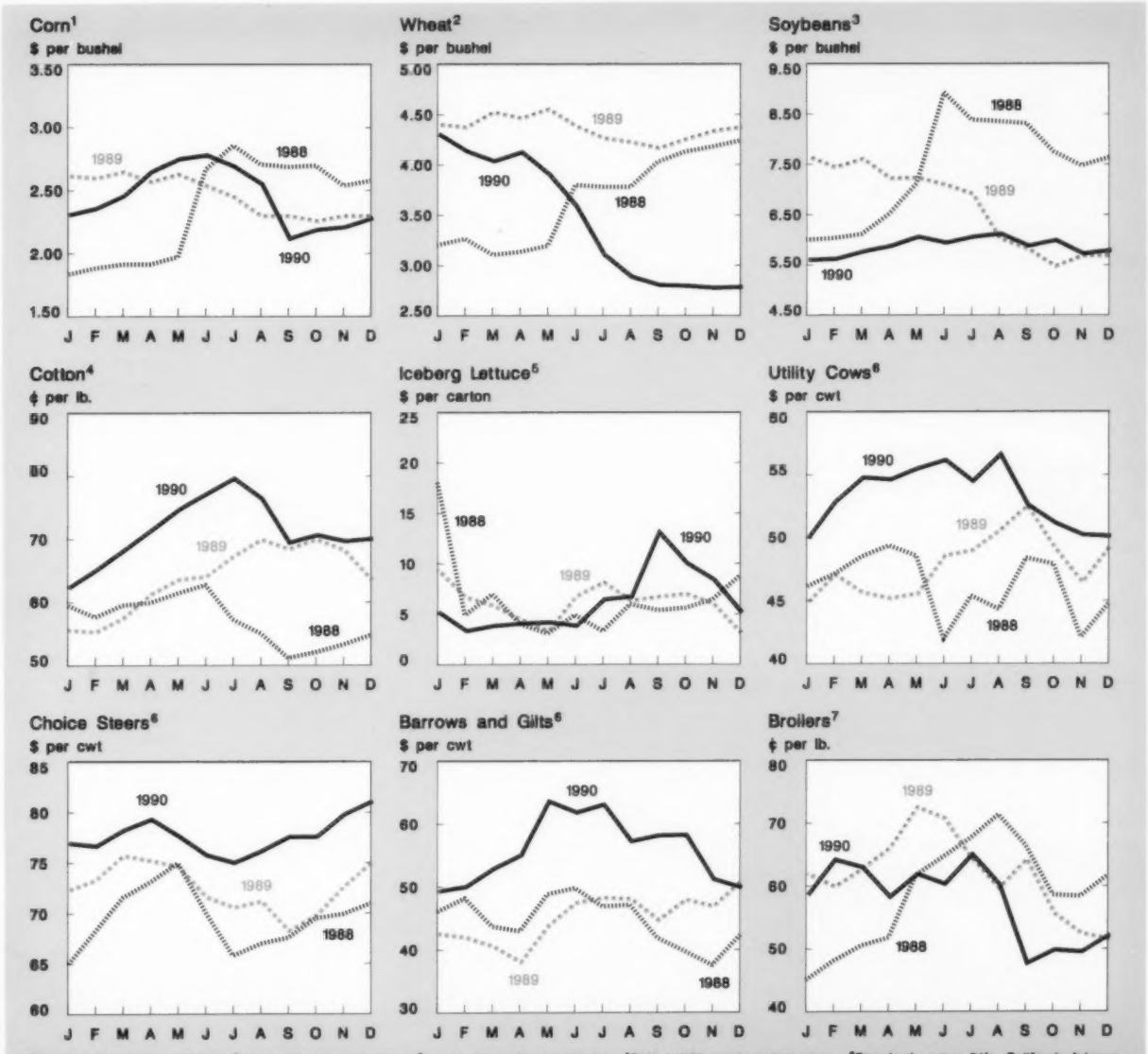
On the other hand, technical refinements cannot help us divine how or when people will change their behavior. The baby boom and the rural turnaround of the 1970's convinced me of the unlikelihood that demographers and other social scientists can foresee turning points in patterns of measurable social behavior. I think we will always be unable to forecast reliably changes in fertility, mortality, marriage, household and living arrangements, residential patterns, and immigration.

Farmline: What will the 1990 Census show? How will the population migration to the South and West affect the political status of the traditional farm States in the Northeast and Midwest?

Beale: The preliminary results confirm that most rural and small town areas that depend on agriculture or mining lost population over the 1980's, as did many manufacturing areas. An astonishing 58 percent of the entire U.S. population increase was concentrated in just three States—California, Florida, and Texas. Such a large shift has not occurred for a century. These two trends will increase the congressional representation of the Southwest and Southeast, and decrease that of the Farm Belt and the manufacturing States of the North. □

Monthly Price Monitor

USDA's December 1990 inflation-adjusted index of farm prices decreased 0.7% from November and was 2.7% below its year-earlier level. Corn gained 7¢ to $2.27 per bushel. Soybeans gained 7¢ to $5.76 per bushel. Wheat held steady at $2.77 per bushel. Cotton fell slightly to 69.9¢ per pound. Iceberg lettuce lost $3.25 to $5.01 a carton. In the meat animals area, choice steers rose to a record high of $80.98 per cwt and utility cows fell to $50. Barrows and gilts declined $1.29 to $49.70. Broilers increased to 52¢ per pound, the highest since last August.



[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16", spot market price. [5]Standard carton 24's, California-Arizona. [6]Omaha. [7]Wholesale, New York. All prices shown are monthly averages.

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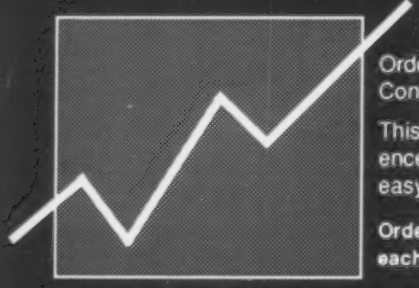

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